

Scope of Claims

What is claimed is,

1. A magneto impedance sensor element with
electromagnetic coil comprised of:

a terminal board on which an extended groove
extending in one direction has been formed; and
an electromagnetic coil, made with one part of the coil
formed spirally inside said extended groove on said
terminal board, and joined to each tip of that part the
other part of the coil placed across the top of the groove
so that together the two parts and form a complete spiral;
and
insulating material placed in the extended groove on said
terminal board; and
a magnetic sensitive body inserted within said insulating
material, to which either high frequency or pulse electric
current is applied; and wherein,
when either high frequency or pulse electrical current is
applied to said magnetic sensitive body, voltage is output
from said electromagnetic coil in response to the intensity
of the external magnetic field generated in said
electromagnetic coil.

2. The magneto impedance sensor element with

electromagnetic coil as recited in claim 1, wherein said magnetic sensitive body is made from of conductive magnetic amorphous metal wire.

3. The magneto impedance sensor element with electromagnetic coil as recited in claim 2, wherein the inner coil diameter of said electromagnetic coil is less than 200 micrometers.

4. The magneto impedance sensor element with electromagnetic coil as recited in claim 3, wherein said electromagnetic coil has a line spacing separation per turn of less than 100 micrometers.

5. The magneto impedance sensor element with electromagnetic coil as recited in claim 2, wherein the length of said magnetic sensitive body has been set at less than 3 mm.

6. The magneto impedance sensor element with electromagnetic coil as recited in claim 2, wherein the ratio of wire diameter to wire length used in said magnetic sensitive body has been set at an aspect ratio from 10 to 100.

7. The magneto impedance sensor element with electromagnetic coil as recited in claim 6, wherein the inner coil diameter of said electromagnetic coil has been set from 1.005 to 10 times the wire diameter of said magnetic

sensitive body.

8. The magneto impedance sensor element with electromagnetic coil as recited in claim 2, wherein the inner coil diameter of said electromagnetic coil is less than 100 micrometers.

9. The magneto impedance sensor element with electromagnetic coil as recited in claim 3, wherein the line spacing separation per turn of said electromagnetic coil is less than 50 micrometers.